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ABSTRACT

This fifth in a series of nine learning modules on instructional management is designed to assist secondary and postsecondary vocational teachers in providing for safety needs of students, in developing safety skills and attitudes in students, and in implementing effective safety practices. Introductory sections relate the competency dealt with in this module to others in the program and list both the enabling objectives for the four learning experiences and the resources required. Materials in the learning experiences include required reading, safety record forms, a self-check quiz, model answers, safety handbook checklist, demonstration/supervision checklists, case studies, model critiques, and the teacher performance assessment form for use in evaluation of the terminal objective. (The modules on instructional management are part of a larger series of 100 performance-based teacher education (PBTE) self-contained learning packages for use in preservice or inservice training of teachers in all occupational areas. Each of the field-tested modules focuses on the development of one or more specific professional competencies identified through research as important to vocational teachers. Materials are designed for use by teachers, either on an individual or group basis, working under the direction of one or more resource persons/instructors.) (EL)

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ED149104

MODULE

E-5

# Provide for Student Safety

**MODULE E-5 OF CATEGORY E—INSTRUCTIONAL MANAGEMENT**
**PROFESSIONAL TEACHER EDUCATION MODULE SERIES**


## The Center for Vocational Education

The Ohio State University

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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CE 014 340

# FOREWORD

This module is one of a series of 100 performance-based teacher education (PBTE) learning packages focusing upon specific professional competencies of vocational teachers. The competencies upon which these modules are based were identified and verified through research as being important to successful vocational teaching at both the secondary and post-secondary levels of instruction. The modules are suitable for the preparation of teachers in all occupational areas.

Each module provides learning experiences that integrate theory and application; each culminates with criterion referenced assessment of the teacher's performance of the specified competency. The materials are designed for use by individual or groups of teachers in training working under the direction and with the assistance of teacher educators acting as resource persons. Resource persons should be skilled in the teacher competency being developed and should be thoroughly oriented to PBTE concepts and procedures in using these materials.

The design of the materials provides considerable flexibility for planning and conducting performance-based preservice and inservice teacher preparation programs to meet a wide variety of individual needs and interests. The materials are intended for use by universities and colleges, state departments of education, post-secondary institutions, local education agencies, and others responsible for the professional development of vocational teachers. Further information about the use of the modules in teacher education programs is contained in three related documents: **Student Guide to Using Performance-Based Teacher Education Materials, Resource Person Guide to Using Performance-Based Teacher Education Materials** and **Guide to Implementation of Performance-Based Teacher Education.**

The PBTE curriculum packages are products of a sustained research and development effort by The Center's Program for Professional Development for Vocational Education. Many individuals, institutions, and agencies participated with The Center and have made contributions to the systematic development, testing, revision, and refinement of these very significant training materials. Over 40 teacher educators provided input in development of initial versions of the modules; over 2,000 teachers and 300 resource persons in 20 universities, colleges, and post-secondary institutions used the materials and provided feedback to The Center for revision and refinement.

Special recognition for major individual roles in the direction, development, coordination of testing, revision, and refinement of these materials is extended to the following program staff: James B. Hamilton, Program Director; Robert E. Norton, Associate Program Director; Glen E. Fardig, Specialist; Lois Harrington, Program Assistant; and Karen Quinn, Program Assistant. Recognition is also extended to Kristy Ross, Technical Assistant; Joan Jones, Technical Assistant; and Jean Wisenbaugh, Artist for their contributions to the final refinement of the materials. Contributions made by former program staff toward developmental versions of these materials are also acknowledged. Calvin J. Cotrell directed the vocational teacher competency research studies upon which these modules are based and also directed the curriculum development effort from 1971–1972. Curtis R. Finch provided leadership for the program from 1972–1974.

Appreciation is also extended to all those outside The Center (consultants, field site coordinators, teacher educators, teachers, and others) who contributed so generously in various phases of the total effort. Early versions of the materials were developed by The Center in cooperation with the vocational teacher education faculties at Oregon State University and at the University of Missouri-Columbia. Preliminary testing of the materials was conducted at Oregon State University, Temple University, and University of Missouri-Columbia.

Following preliminary testing, major revision of all materials was performed by Center Staff with the assistance of numerous consultants and visiting scholars from throughout the country.

Advanced testing of the materials was carried out with assistance of the vocational teacher educators and students of Central Washington State College; Colorado State University; Ferris State College, Michigan; Florida State University; Holland College, P.E.I., Canada; Oklahoma State University; Rutgers University; State University College at Buffalo; Temple University; University of Arizona; University of Michigan-Flint; University of Minnesota-Twin Cities; University of Nebraska-Lincoln; University of Northern Colorado; University of Pittsburgh; University of Tennessee; University of Vermont; and Utah State University.

The Center is grateful to the National Institute of Education for sponsorship of this PBTE curriculum development effort from 1972 through its completion. Appreciation is extended to the Bureau of Occupational and Adult Education of the U.S. Office of Education for their sponsorship of training and advanced testing of the materials at 10 sites under provisions of EPDA Part F, Section 553. Recognition of funding support of the advanced testing effort is also extended to Ferris State College, Holland College, Temple University, and the University of Michigan-Flint.

Robert E. Taylor
Executive Director
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THE CENTER FOR VOCATIONAL EDUCATION
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The Center for Vocational Education's mission is to increase the ability of diverse agencies, institutions, and organizations to solve educational problems relating to individual career planning, preparation, and progression. The Center fulfills its mission by:

- Generating knowledge through research.
- Developing educational programs and products.
- Evaluating individual program needs and outcomes.
- Installing educational programs and products.
- Operating information systems and services.
- Conducting leadership development and training programs.

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The American Association for Vocational Instructional Materials (AAVIM) is an interstate organization of universities, colleges and divisions of vocational education devoted to the improvement of teaching through better information and teaching aids.

# INTRODUCTION

As a vocational teacher, you have both a personal and professional responsibility for helping your students to develop the kind of work habits and attitudes that will reduce the chance of injury both to themselves and others. A sound safety program in your laboratory will develop safety habits in students and will benefit them in the shop, on the job, and at home.

Recently, the Bureau of Labor Statistics revealed that over 5.9 million work-related injuries and illness, of which 97% were injuries, occurred. By providing an environment where students can develop the safety awareness so important in business and industry, you can help reduce this alarming statistic.

In both accident prevention and treatment, federal, state, and local regulations are available to help you determine safety procedures in vocational programs. Record-keeping techniques have also been devised which you can use to (1) aid you in organizing your safety instruction, (2) help you provide an accurate report should you be charged with negligence by an injured student, and (3) help you guard against similar accidents in the future. Such records can also help you monitor your safety instruction. They can provide a handy reference for safety aspects you have covered and those still needing your attention.

The learning experiences in this module are designed to help you provide for the safety needs of your students. It will give you skill in developing safety skills and attitudes in students and will help you to implement effective safety practices.

# ABOUT THIS MODULE

## Objectives

**Enabling Objectives:**

1. After completing the required reading, demonstrate knowledge of the techniques and procedures for providing for student safety needs (*Learning Experience I*).
2. Based on applicable local, state, and federal safety laws and student performance objectives in your occupational specialty, prepare a safety handbook (*Learning Experience II*).
3. For simulated school situations, provide for student safety needs (*Learning Experience III*).

## Prerequisites

To complete this module, you must have competency in developing a lesson plan and demonstrating a manipulative skill. If you do not already have these competencies, meet with your resource person to determine what method you will use to gain these skills. One option is to complete the information and practice activities in the following modules:

- *Develop a Lesson Plan*, Module B–4
- *Demonstrate a Manipulative Skill*, Module C–16

## Resources

A list of the outside resources which supplement those contained within the module follows. Check with your resource person (1) to determine the availability and the location of these resources, (2) to locate additional references in your occupational specialty, and (3) to get assistance in setting up activities with peers or observations of skilled teachers, if necessary. Your resource person may also be contacted if you have any difficulty with directions, or in assessing your progress at any time.

### Learning Experience I

Required

*Reference: Occupational Safety and Health Standards*, Code of Federal Regulations, Title 29, Parts 1910 and 1926. Washington, DC: Occupational Safety and Health Administration, latest edition.

Optional

*Reference:* Baird, Ronald J. *Contemporary Industrial Teaching*. South Holland, IL: Goodheart-Willcox Company, 1972.

*Reference:* Kigin, Denis J. *Teacher Liability in School-Shop Accidents*. Ann Arbor, MI: Prakken Publications, Inc., 1973.

### Learning Experience II

Required

*Local, state, and federal safety laws* applicable to your occupational specialty to use in preparing a safety handbook.

Optional

*Reference:* Detroit Public Schools. *Keys to Safety in Homemaking*. St. Louis, MO: McGraw-Hill Book Company, Webster Division, 1966.

*Reference: Industrial Arts and Vocational Education Safety Manual*. Columbus, OH: Industrial Commission of Ohio, Division of Safety and Hygiene, n.d

*An industrial facility* related to your occupational specialty which you can visit.

*A resource person* to review an outline of your safety handbook.

### Learning Experience III

Required

1 peer to role-play a student to whom you are presenting a manipulative skill demonstration, and to critique your performance in providing for his/her safety needs. If a peer is unavailable, an alternate activity has been provided.

*Materials (e.g., hand tools, power tools, appliances, safety apparel, or equipment)* to use in the manipulative skill demonstration.

Optional

*A resource person* to review the adequacy of your lesson plan.

*Videotape equipment* for taping, viewing, and self-evaluating your presentation.

### Learning Experience IV

Required

*An actual school situation* in which you can provide for student safety.

*A resource person* to assess your competency in providing for student safety.

**Note:** In providing for student safety, you must be familiar with safety standards and regulations. Thus, it is recommended that the following recently published document be used as a supplement to this module: Wahl, Ray. *A Safety and Health Guide for Vocational Educators: An Instructional Guide with Emphasis on Cooperative Education and Work-Study Programs*. Harrisburg, PA: Pennsylvania Department of Education, Bureau of Vocational Education, 1977.

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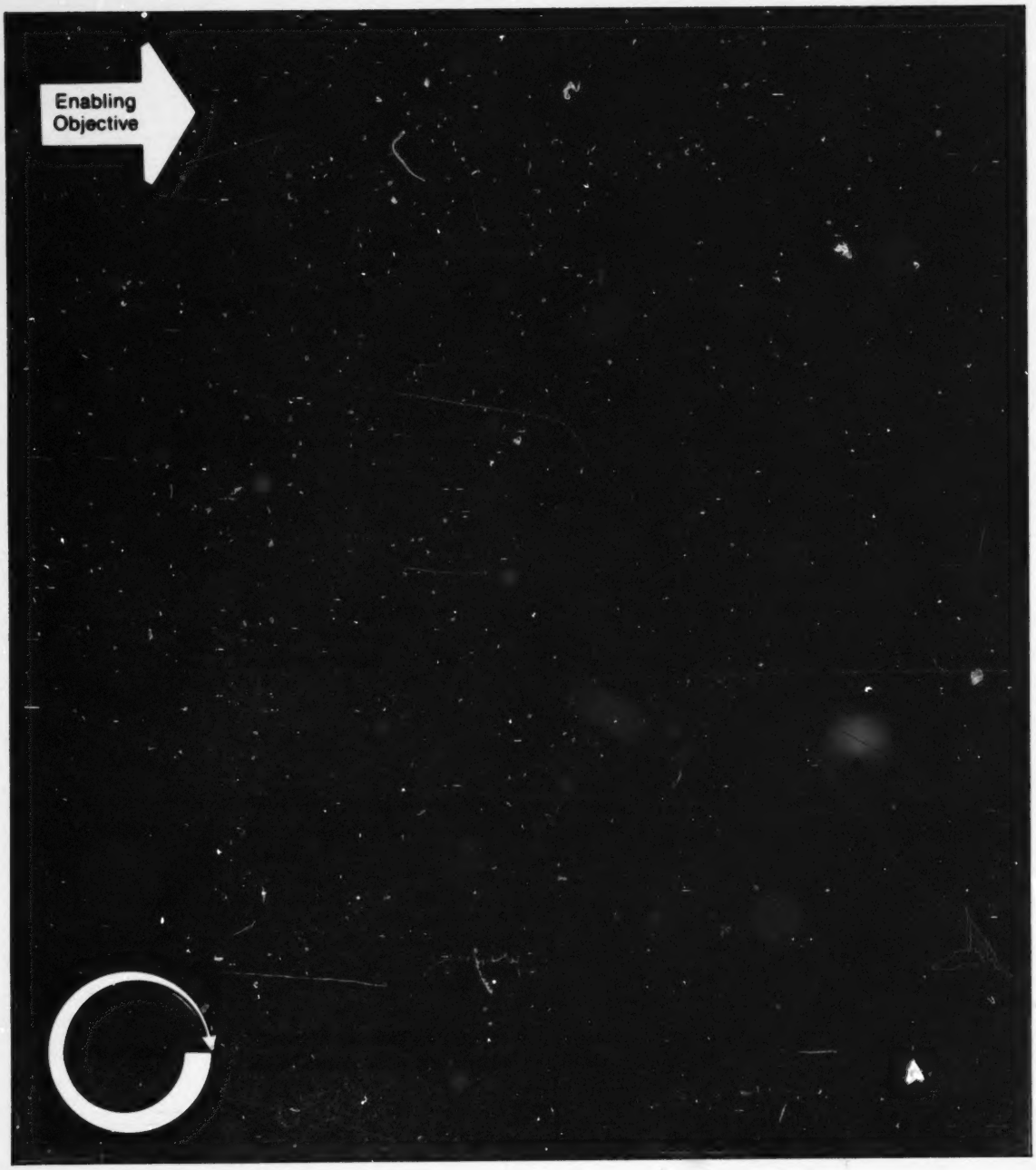
This module covers performance element numbers 183, 185 from Calvin J. Cotrell *et al., Model Curricula for Vocational and Technical Teacher Eduction: Report No. V* (Columbus, OH: The Center for Vocational Education, The Ohio State University, 1972). The 384 elements in this document form the research base for all The Center's PBTE module development.

For information about the general organization of each module, general procedures for their use, and terminology which is common to all 100 modules, see About Using The Center's PBTE Modules on the inside back cover.

# Learning Experience I

**OVERVIEW**



Activity

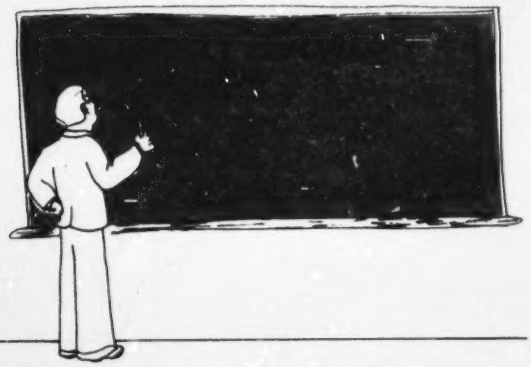
For information on the general practices involved in developing safety knowledge, skills, and attitudes in students, read the following information sheet:

# PROVIDING FOR STUDENT SAFETY NEEDS

The importance of developing in students good safety habits, skills, and knowledge for use at home, school, and play cannot be overemphasized. Vocational teachers are in a unique position to contribute to the development of safety attitudes and work habits in students. Their efforts to develop a safety awareness in each student can influence the accident rate in school and non-school activities (e.g., at home, on the job). This information sheet discusses the safety needs of vocational students, and your role as a vocational teacher in providing for those needs.

## The Vocational Safety Program

The success of any given vocational program depends, in part, on the identification and use of appropriate practices to meet the objectives of that program. The school shop or laboratory safety program is no exception. It is, therefore, necessary for you to determine those objectives in each training situation that are vital to the safety goals of the program.



Although each occupational specialty and laboratory situation is unique, the following safety objectives will be common to all programs.

- Form, by teacher example, a **safety consciousness** in students.
- Instruct students in **accident prevention** by stressing the correct (safe) way to perform a task.
- Provide **safety instruction** in order to help students—
  - **acquire** a sense of responsibility for their own and others' safety
  - **understand** that the effective ways of doing things are the safe ways
  - **recognize** hazardous situations
  - **use** safe practices in their out-of-school activities
- Instruct students on **what to do** in case of accidents.
- Provide information on general **safety rules.**
- Provide information on specific **safety practices** for tools, appliances, and machines.
- Develop some means for **evaluating** each student's knowledge, skills, and attitudes toward safety.

A description of several techniques and practices found successful in achieving these objectives follows. Please keep in mind that specific practices unique to your laboratory or occupational specialty may not appear in the sections that follow. This reading is intended for **general** laboratory situations regardless of area of specialization. References will be made in this reading, however, to guide you in learning about safety practices unique to your own occupational specialty.

## Safety Consciousness

Critics of the effectiveness of safety programs in vocational training produce a very convincing argument that the technology of industry is too fast moving. This rapid pace makes it difficult for vocational teachers to teach relevant safety skills. The claim is that by the time safety skills are learned, they have already become obsolete. While this claim may or may not be true, if vocational teachers and their students have a strong safety **attitude,** their awareness of safety precautions **cannot** be affected by technological change.

One way to develop this safety consciousness in students is through the teaching of safety skills and habits. The expectation is that even if some specific safety skills become out of date, attitudes such as a strong concern for accident prevention will transfer to the new work situation. Thus, these attitudes will provide motivation for learning **new** safety skills. What is essential, in other words, is that students develop a strong concern for safety, a positive attitude toward it.

The way you organize and operate your shop or laboratory will affect the development of strong safety attitudes in your students. If students **observe** safe organization and use of materials and equipment, and if you strictly supervise their activities, students will begin to develop a safety consciousness. The specific attitudes that need to be developed are those that convince the student that (1) accidents are **seldom** accidental, (2) accidents are **not** an inevitable part of everyday life, (3) accidents, for the most part, are **caused by people,** (4) accidents **can be prevented,** and (5) **everyone is responsible** for preventing accidents, to himself/herself and to others. A student with these attitudes will automatically respond to a potentially hazardous situation by acting in a safe manner.

To allow for the formation of these attitudes, you must be aware of the conditions under which good safety attitudes may be formed. Attitude formation does not occur overnight.[1] It is the result of a long, patient teaching-practice process.

Attitudes, since they are learned behaviors, are dependent upon the motivation of the student, but motivation does not just appear. It is fostered in safety education as in any other learning activity. You can use as many teaching techniques as the situation dictates (e.g., demonstration, talk, field trip). Good safety attitudes are not formed by rule-making alone. You must develop the safety program not only by effective instruction (direct method), but also through teaching by example (indirect method).

A final condition for attitude formation is that teaching and practice are most effective when done in a positive manner. That is, you should avoid long lists of safety rules to enforce, warnings and threats with regard to conduct, or shock techniques. Rules are important, but should be kept to a minimum. Safe conduct must be seen as desirable by students, not motivated by school grades or by personal fear.

1. To gain skill in assessing student attitudes, you may wish to refer to Module D–3, *Assess Student Performance: Attitudes.*

## General Safety Regulations

At the beginning of vocational courses, especially those which involve laboratory work, students can benefit from instruction in general safety procedures related to that training program. You should carefully prepare the working environment for this initial introduction to safety regulations. It should be obviously safe and well organized in appearance. That is, tools and machines should be clean and ready for use, safety guards in place, and personal safety apparel ready for use. With the working environment carefully organized, the students will be ready to accept general safety regulations to guide their conduct.

One of the first things you must do is to find out if any students have physical conditions that may interfere with their activities in the program or their operation of hazardous equipment. Such information may be available from students' school records or from students themselves. Once you have **identified** problems that certain students may have, you need to **respond** to this knowledge by taking any appropriate safety precautions. For example, if a student has epilepsy, this condition will probably not affect his/her success in your vocational program. However, you would need to be aware of the extent to which his/her condition is controlled, and to plan activities for this student accordingly—ensuring the student's safety without singling the student out as being different.

The class safety program should start right at the beginning of the course. The first safety lesson should cover the general safety procedures, rules, and regulations. The following safety rules are typical of those which might be used in a **machine** shop. However, certain of the items would be applicable to other types of vocational laboratories as well.

- Use machine guards at all times.
- Operate specified hazardous equipment only when the teacher is present.
- Leave the main power line disconnected when the teacher is absent.
- Do not operate machines when other students are close to the area.
- Use appropriate eye protection at all times while in the laboratory or shop.
- Use only those tools, equipment, and materials designated by the vocational instructor.
- Refrain from loitering in the work areas of the shop or laboratory.
- Report all accidents immediately.
- Report any hazardous conditions to the instructor.
- Return all tools and equipment to their designated places.
- Clean work areas before leaving the shop or laboratory.

Other regulations would be necessary in special situations or in specific service areas.

In addition to these general safety rules, the first lesson should include information about the safety features of the laboratory itself. Students should be shown where the emergency exits are located and what route to take to get out of the laboratory quickly; where the electrical "panic switches" are located and how to use them; where the closest fire alarm is located; and how to use any special safety equipment such as showers.

In some vocational programs, instructors find it necessary to give a special lesson on fire prevention and control. The lesson may need to cover the location of the various types of fire extinguishers and the kinds of fires on which each is to be used. Quite often, the local firefighting unit is asked to come to the school to put on an actual demonstration of the techniques to use in controlling a small fire with an extinguisher. Such a unit is usually very glad to do this, and it makes a most dramatic and effective lesson.

The examination covering these introductory safety lessons should show 100 percent comprehension by the students. No student should be permitted to work in the laboratory until he or she is completely familiar with the regulations. If necessary, you should repeat any parts of the lesson that students did not understand or remember.

All safety regulations must be thoroughly and consistently enforced. If exceptions are made, the safety program can quickly break down.

## Equipment Safety

The "hands-on" approach to vocational skill development requires the use of many tools, appliances, and machines. In order for students to use this equipment safely, safety procedures for each piece of equipment should be developed and implemented.

Laboratories in which hand tools are in use have unique safety problems. Students have a tendency to assume that hand tools are not hazardous, so they may develop a casual attitude toward their use. The fact is, hand tools, improperly used, can cause very serious injury. Dull, broken, or even improperly adjusted hand tools are a major cause of minor injuries in vocational training situations. For example, many students are injured when they try to use a wrench as a hammer, or a screwdriver as a chisel. Even something as simple as steel wool can cause a deep cut if it is carelessly used.

It is your responsibility to assist students in learning how to use tools properly by providing good demonstrations of their use. This should be followed by student demonstration of proper tool use to show that they understand. Repeated **practice** under close **supervision** will help your students develop a positive attitude toward the safe use of hand tools.

Another safety technique that helps students to develop safety consciousness with hand tools and materials is to carefully organize the storage and use of such tools. Some place should be designated for each tool to be stored when it is not in use. Tool racks, tool cribs, panels, and other such devices can serve this purpose. Their use allows you to maintain control of who uses these tools and to keep the shop clear of unused tools. This is especially important for tools with sharp edges that could cause accidents when left in working areas.

Much of this discussion on hand tools is also applicable to machines, especially portable power tools. However, additional safety practices are needed for power equipment such as duplicators, table saws, baking ovens, sewing machines, grinders, X-ray cameras, etc.

Every piece of power equipment should have a set of safety practices developed for it. You must include this safety information in the demonstration of the machine, and students should pass a test on the machine before being permitted to use it. You may find it helpful to post the safety rules near the machine to which they refer. Students must be aware of the necessity for disconnecting this equipment when not in use and operating it in dry surroundings using proper safety guards. You must also see to it that these tools are connected to the main electrical switch and to a "panic switch" that cuts off the power with a tap of the hand.

The need for equipping all tools with proper safety guards, and for students to use these guards, is vitally important. Current practices in machine guarding can be obtained by consulting with national, state, and local regulatory agencies. Machine manufacturers can also assist you in determining the safety guards required for tools and equipment in your shop or laboratory. Sometimes, guards create a bit of inconvenience in the operation of the machine, so students want to remove them. You must **never** allow this to happen.

As an additional safety practice, you should carefully locate heavy machines. They should be placed at a safe distance from other machines, and a standard working space should be designated around each machine. In addition, machine parts should be identified by a standard color coding (i.e., red for electrical parts, orange for moving parts, and green for other non-moving parts).[2]

Obviously, introducing your students to all necessary safety practices in a vocational course or program cannot (and should not) be done in just the first week of class. You should be prepared to present this program as an ongoing process using a variety of teaching strategies.

There are many ways in which you can provide a continuous safety program. One technique is the laboratory demonstration or talk. Through this method, you can effect change by setting an example. For example, safety skills are reinforced when the students are able to see you check all tools and equipment for safety before using them.

2. To gain skill in organizing and managing a vocational laboratory, you may wish to refer to Module E-8, *Organize the Vocational Laboratory*, and Module E-9, *Manage the Vocational Laboratory*.

Periodic talks on various aspects of the safety program can also be used to reinforce the importance of developing proper safety skills and knowledge. Taking field trips and inviting guest speakers are extremely effective techniques to use in a safety program. They provide an opportunity for students to see an actual industry in operation and talk to the employees to get firsthand information about safety practices used.

Additionally, safety posters and literature can assist you in a continuous program of safety. A poster above a machine illustrating what could happen when guards are removed will go a long way toward keeping your students safety minded.

Much of this type of safety material can be obtained free of charge; most machine manufacturers will welcome the chance to assist you. The National Safety Council is another source of such materials.

## General Housekeeping

Most school shops or laboratories that are adequately equipped will be the scene of a great deal of activity. The active use of materials and equipment can result in a tremendous amount of waste materials and general disorder. This condition presents a safety hazard when ignored. Therefore, your safety program is incomplete without some provisions for cleaning up the entire facility before the end of a school day, or before the end of a class period. A good vocational safety program should include the following housekeeping practices.

- Provide for sweeping the shop floors at least once each class period if necessary.
- Employ specific procedures to keep the floors free of oil, grease, water, and other materials that could make it slippery.
- Provide for daily removal of all accumulated sawdust, shavings, metal cuttings, sewing scraps, cooking scraps, and other waste materials.
- Provide designated boxes or bins for usable scrap materials.
- Provide adequate brushes, dust cloths, and cleaning solutions for maintenance of equipment.

Poor housekeeping can be very disruptive to the safety program. You should take every opportunity to point out the value of good housekeeping and to emphasize that it is everyone's responsibility (i.e., the school administrators, the vocational teacher, the students, and the custodian). You should reinforce that organized housekeeping helps students to (1) develop a safety **consciousness,** (2) develop a sense of personal **responsibility** for a safe environment, and (3) **avoid accidents.**

You are a critical component of the safety program. All through the laboratory period, you provide a model of conduct that students will copy. Naturally, that model should be the best one possible. You can move a tool to store it properly, pick up a piece of scrap material from the floor, adjust a safety guard on a machine, and put on a pair of gloves when you are about to handle a hot item.

You can involve students by asking a student to check a tool for safe condition, reminding another student about a safety rule for the machine he/she is using, or asking a discreet question about a potential hazard. All the while, you should be observing students to be sure they are working safely, and listening for any sounds that would indicate that a machine is functioning improperly.

## Personal Habits

In addition to stressing the importance of observing safety regulations related to machine use, you need to emphasize the safety requirements related to proper grooming and dress. Students should be aware of the hazards of improper grooming and dress, and should begin to take appropriate safety precautions **automatically.** For example, your students should automatically remove neckties, wristwatches, and rings; roll up shirt sleeves above the elbow; and dress with the appropriate protective equipment and safety devices when preparing to work in the laboratory.

You should quickly check each student for **safety grooming** before permitting any work. Does everyone have his/her sleeves rolled up? Is jewelry removed? Is long hair tied back? Are ties removed or tucked inside? One way to reinforce these safety practices (at least in secondary schools) is to have each student check another student to his/her right or left to identify any lack of good safety grooming and/or protective apparel. The amount of attention given these practices depends, to an extent, on the grade level of the students.

## Personal Protective Equipment/Devices/Apparel

Protective equipment, devices, and apparel protect against an accident or unusual safety hazard. They **cannot** and **should not** be expected to substitute for the elimination of safety hazards in the laboratory. In other words, wearing a filter respirator for protection against dust and gases that are allowed to escape freely in the shop area is poor safety procedure. Adjustments for ventilating the gas and dust should be made before the filter is selected. In this case, the filter is serving as protection against a **known** hazard which could have been **prevented** by a more direct safety system.

### Eye Protection

The importance of preserving good eyesight is emphasized from early childhood. This emphasis is especially important in vocational laboratories where a variety of activities could be hazardous to the unprotected eyes. In any laboratory where machines or materials that are potentially hazardous to the eyes are being used, every student should wear eye protection at all times. Following are descriptions of the various kinds and functions of eye protection devices found in most vocational programs. For general eye protection, it is best if each student owns his/her own pair of goggles rather than for the school to provide them.

**Spectacle goggles.**—Spectacle goggles look like prescription glasses and are extremely useful for impact protection. They can be worn with ease and comfort by most people. Manufacturers have special designs with cable-type temples to provide flexibility in adjusting the glasses to long and short temple lengths. Safety shields attached to the goggles provide additional protection. These shields, attached to both sides of the goggles, are usually made from a plastic material. They can be permanently or temporarily attached, and are either solid or perforated for ventilation. Prescription glasses made during the last few years have tempered glass lenses that act as safety glasses. If there is any doubt about a particular pair of glasses, they can be checked by an optician.

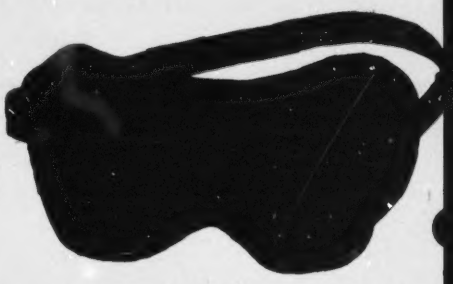
**Cup-goggles.**—Cup-goggles provide even greater eye protection. A headband is used to fit the cups securely around the face bone surrounding the eye. Cup-type goggles are recommended for operations where dust and chips are produced, such as grinding-type processes.

As with most tight-fitting eye apparatus, cup-goggles have a tendency to fog. The safety protection provided by these goggles, however, far outweighs this inconvenience. The lenses on the cup-goggles are produced in a wide range of colors for shielding one's eyes from the bright light and sparks produced by gas welding.

**Face shields.**—A useful eye protection device for light impact is the face shield. This device is made of a plastic shield that covers the entire face, and is attached with head gear or a headband. It is required in addition to safety glasses in some industries where molten metals and chemicals are involved.

Helmets made of fiberglass with a small rectangular viewing window are used for electric welding and for other operations where there is danger from heat, light, or impact. For some uses, the window glass may be transparent, but for welding, the correct type of very dark glass must be selected.

**Cover goggles.**—When uncorrected vision will not meet vision standards for work, students must wear their regular prescription glasses at all times. If additional protection is necessary, cover goggles can be worn over regular spectacle glasses. These frames are made of durable soft plastic material with side perforations for ventilation and a rubber-type headband.



## Head and Ear Protection

Although head and ear injuries are not common in the school shop, certain shop activities warrant the use of head and ear protection. For example, the safety hat is a required protective device in most building construction laboratories. Ear protection is essential in certain aircraft engine shops

where students are subject to constant, intense sound ranging upward of 100 decibels.

A safety hat with a full all-around edge is most often used to cover all head surfaces. The cap style (less protection around the edge) is becoming increasingly popular, especially among supervisors on the job. The "hard hat" is usually water resistant and noncombustible, and a nonconductor of electricity. The cradle and sweat band should be readily replaceable for cleaning purposes.

While simple wax or plastic plugs may be used, the best ear protection devices are acoustical ear muffs that completely surround the ear. A range of types is available to meet the needs of various kinds of noise problems.

## Hand, Foot, and Leg Protection

Hand, foot, and leg protection is generally for protection from minor injuries. You should remember, however, that injuries to the fingers are the most frequent kind of injury in school shops.

**Gloves.**—Hand protection from normal blisters due to friction can be provided by gloves made of inexpensive and easily procured materials such as canvas or heavy cotton. When heavier work, or heat, is involved, more protective leather or asbestos gloves are worn. Some operations call for the use of mittens, while for welding, a gauntlet style of glove is essential.

**Shoes.**—Safety shoes with steel box toes are recommended for foot protection in some laboratories. Modern versions of safety shoes are good looking and usually cannot be distinguished from ordinary shoes. Except for electricians, many workers are required to wear shoes with inner soles of metal in addition to the metal box toe. Electricians should wear shoes with special nonconductive soles.

## Respiratory Devices

A very useful piece of protective equipment needed in the school shop is the filter respirator. This device consists of a face piece to filter fumes and dust out of the air as it is inhaled. Other, more sophisticated, filters are available to filter more serious air contaminants.

## Miscellaneous Personal Protective Equipment

There is other, less specific wearing apparel useful in shop or laboratory situations (e.g., aprons, coveralls, and shop coats). This apparel is used to give general body protection against grease, dust,

hot metal splashes, etc. The material used for these devices is usually a rugged cloth that can withstand long periods of washing and wearing.

As with ordinary clothing, this protective apparel can create additional hazards when not properly fitted. Long sleeves, loose apron strings, etc., create dangerous situations around moving machinery and appliances. Therefore, you should see to it that each student uses this equipment properly.

Protective devices, equipment, and apparel are available in a wide range of materials and styles, and are of varying quality. The important point to remember is that there are devices to protect all parts of the body for all types of jobs. It is your responsibility to (1) know the devices required by law, (2) select the best possible device for the situation, (3) assist students in developing a positive attitude about their use, and (4) demonstrate their proper use and maintenance.

Information on what is required by law is usually available from the state and local vocational education offices. As with most safety practices, requirements for personal protective devices may vary from state to state.

## Record Keeping

Record keeping in a safety program involves recording safety instruction and any minor accidents. A record of safety instruction serves a twofold purpose. First, it attests to how well you provide students with a safe learning and working environment. This record may be especially valuable if you are charged with negligence by an injured student. Secondly, a record of safety instruction will serve as a handy reminder of safety aspects covered and those still needing attention. You should review this record regularly to determine whether adequate safety instruction has been offered.

The beginning teacher is in a more vulnerable position as to legal liability than is an experienced teacher. It is particularly important in this case to maintain an accurate record of safety instruction given, and the results of students' tests.

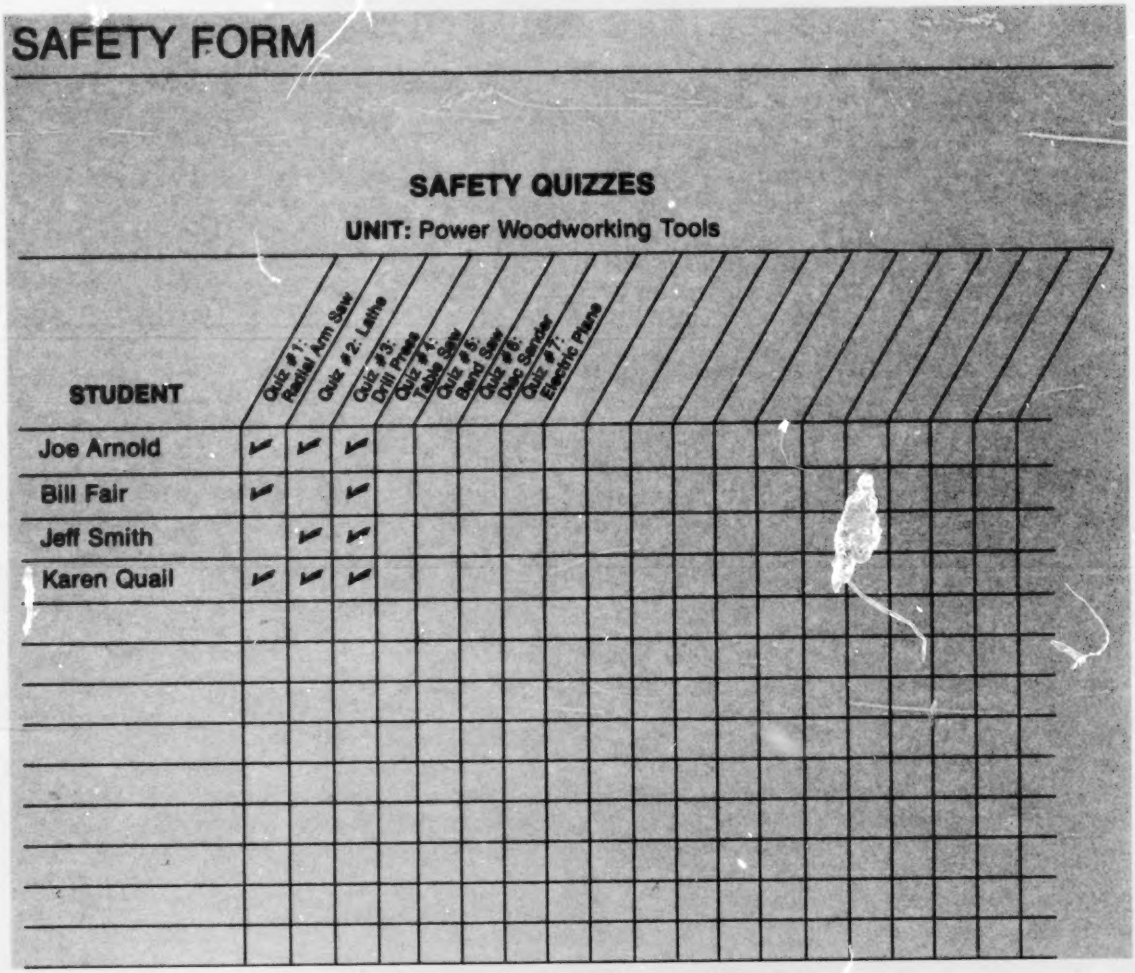
A convenient way to record safety instruction is to keep a list of student safety quizzes in your teacher's plan book. This requires you to test students on their knowledge of safety procedures after each new operation is introduced. Those students who score 100% on the quiz may then be allowed to perform the operation. This assures you that all students who are performing the operation in the laboratory know the correct procedure to follow. By using this method of recording safety instruction, you will be able to help students who did not answer all questions correctly to work on aspects of safety they had difficulty with until they are able to pass the quiz. Some teachers require that students sign and date each safety quiz upon achieving 100%, then keep the quizzes on file. This seems to reinforce the seriousness of safety instruction and to provide additional support for the instructor should liability cases occur.

Samples 1 and 2 are forms which you may wish to use to record safety instruction.

Most schools have a specific policy that all accidents, regardless of severity, should be reported. This policy is especially important in vocational education because of the contribution accurate reporting can make to safety programs.

Records of laboratory-related accidents can assist you in improving the safety program, and sometimes prevent more serious accidents. For example, a record of several students getting caught on a doorstop should be enough proof that the doorstop is a menace to safety and should be moved or repaired. Most school systems will have accident forms available for this purpose.

**SAMPLE 1**



## SAFETY FORM

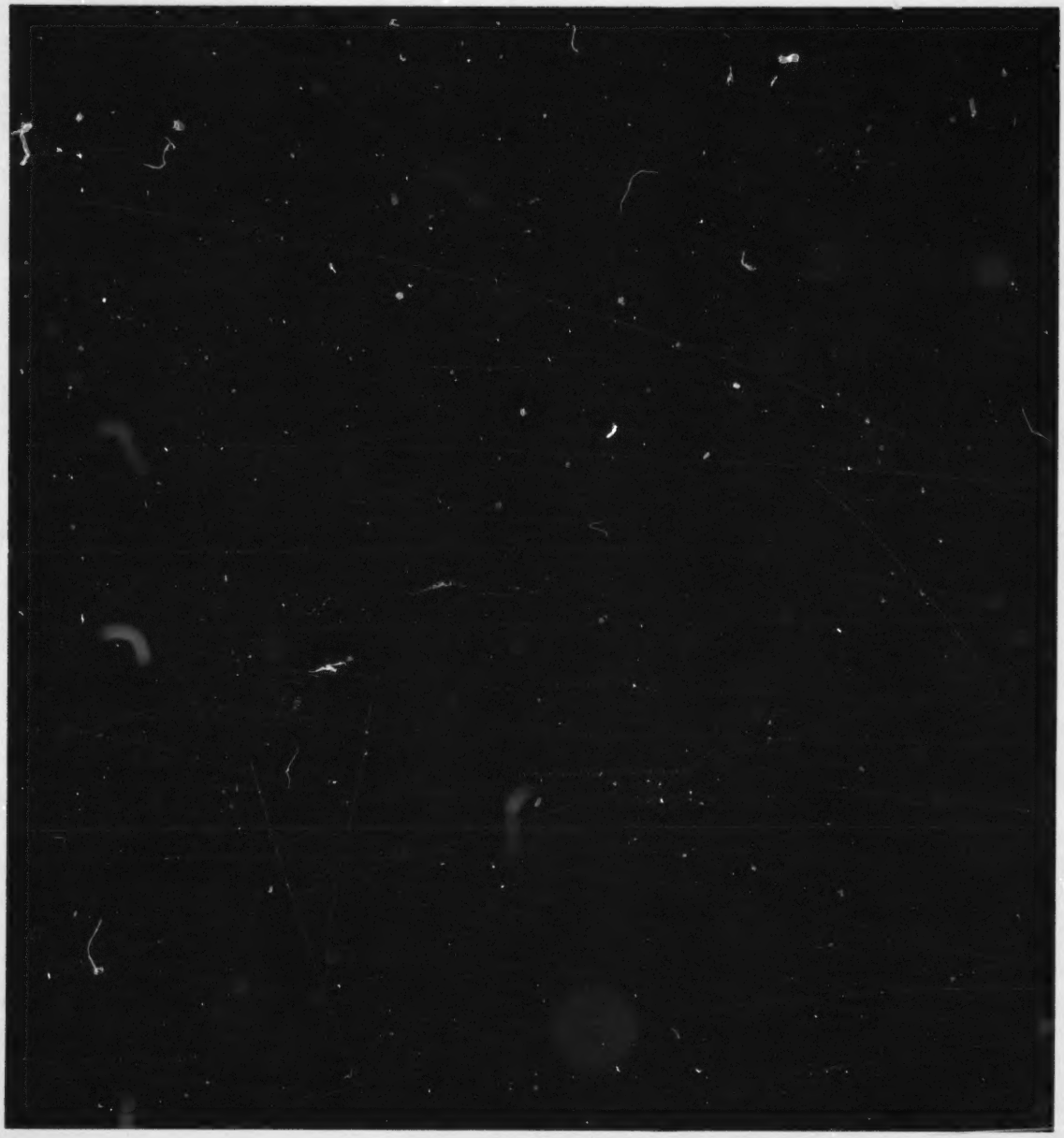
### SAFETY QUIZZES

**UNIT:** Power Woodworking Tools

| STUDENT | Quiz #1: Radial Arm Saw | Quiz #2: Lathe | Quiz #3: Drill Press | Quiz #4: Table Saw | Quiz #5: Band Saw | Quiz #6: Disc Sander | Quiz #7: Electric Plane |
|---|---|---|---|---|---|---|---|
| Joe Arnold | ✓ | ✓ | ✓ | | | | |
| Bill Fair | ✓ | | ✓ | | | | |
| Jeff Smith | | ✓ | ✓ | | | | |
| Karen Quail | ✓ | ✓ | ✓ | | | | |

*This format could be incorporated in the standard teacher's plan book

**SAMPLE 2**



## National, State, and Local Agencies

The vocational shop or laboratory teacher has a unique opportunity to draw from many national, state, and local agencies for assistance in determining regulatory safety standards as well as keeping up to date on new safety equipment and devices. Such agencies can be extremely helpful to the teacher, without cost to students or school, by providing unpublished materials, information on technical aspects of safety, and model illustrations of new safety apparel. The following is a small sample of the multitude of organizations ready to help to make our environment safe. They range in kind from public to nonprofit, private organizations.

### National Agencies

- American Society of Safety Engineers, Chicago, Illinois
- Association of Casualty and Surety Companies, New York, New York
- National Board of Fire Underwriters, New York, New York
- National Safety Council, Chicago, Illinois
- Underwriters' Laboratories Inc., Chicago, Illinois
- Occupational Safety and Health Administration, Washington, DC

### State Agencies

- State Divisions of Safety Inspection
- State Divisions of Industrial Safety
- State Department of Labor
- State Division of Health & Hygiene

### Local Agencies

- American Red Cross
- Insurance Agencies
- Community Safety Council

Agencies such as those listed above can assist the vocational teacher with safety laws and regulations that are unique to his/her occupational specialty and geographic location.

In addition, every vocational teacher, regardless of service area, should have in his/her possession a copy of *Occupational Safety and Health Standards* which is made available by the Occupational Safety and Health Administration (OSHA), U.S. Department of Labor. This publication sets forth all federal rules and regulations regarding occupational safety and health standards.

It is vital that you are knowledgeable about all pertinent information contained in this publication that relates to your service area. These rules and regulations must be observed for your personal safety and the safety of your students. To enforce them, OSHA representatives can make an inspection of your shop or laboratory to see if equipment, facilities, practices, etc., comply with federal guidelines. Some of the areas covered in this reference include—

- Walking-Working Surfaces
- Powered Platforms, Manlifts, and Vehicle-Mounted Work Platforms
- Occupational Health and Environmental Control
- Hazardous Materials
- Personal Protective Equipment
- Medical and First Aid
- Compressed Gas and Compressed Air Equipment
- Machinery and Machine Guarding

Obtain a copy of *Occupational Safety and Health Standards*. This publication is available free of charge from the U.S. Department of Labor or your state Occupational Safety and Health Administration office. Read the rules and regulations contained in those sub-parts which relate to your service area. If you are presently teaching, determine if your shop or laboratory complies with federal guidelines.

For further information on safety in a vocational program, you may read Baird, *Contemporary Industrial Teaching*, pp. 77–82; and Kigin, *Teacher Liability in School-Shop Accidents*, pp. 74–86.

The following items check your comprehension of the material in the information sheet, Providing for Student Safety Needs, pp. 6–17. Each of the seven items requires a short essay-type response. Please explain fully, but briefly.

## SELF-CHECK

1. Discuss reasons why a good safety attitude need not be affected when old safety skills and knowledge become obsolete.

2. What are some of the aspects of a safety program that should be taught at the very beginning of a vocational class?

3. Explain why personal protective devices are **not** considered a primary defense against injury.

4. How can accident reports improve the safety program?

5. What are some indicators of a potentially strong safety program?

6. Of what benefit is a record of safety instruction?

7. What purposes can safety posters serve in a school shop or laboratory?

Compare your written responses on the Self-Check with the Model Answers given below. Your responses need not exactly duplicate the model responses; however, you should have covered the same **major** points.

## MODEL ANSWERS

1. A good safety attitude is the result of an awareness of the need for safety and a readiness to act in a safe manner. This attitude—which is formed by teacher example and by laboratory activities that teach students how to conduct themselves safely around the tools, materials, and equipment of industry—becomes a habit. Once it is formed, changes in given safety skills resulting from innovations in equipment, tools, or materials should not weaken one's attitude toward safety.

2. General kinds of safety information should be given at the beginning of a class. This information should cover all major parts of the safety program. The following questions should be answered.
   - Under what conditions may hazardous equipment be operated?
   - What kind of conduct is appropriate in and around the shop or laboratory?
   - What should be done in case of an accident?
   - How should tools be checked in and out?
   - What color codes are used on machines?
   - What general housekeeping rules should be observed?
   - What is the proper use of tools?
   - What is appropriate eye wear and when should it be worn?
   - What are the safety features of the laboratory?

3. Personal protective devices are considered a **back-up** defense to the best possible safety system already employed. The first goal of the safety program should be to **eliminate** or **reduce** danger, not just protect oneself against it. A fireproof apron is only a secondary defense against flammable liquids when nonflammable liquids are available. The primary source of prevention, then, is to eliminate the flammable liquid.

4. The best safety program can only eliminate, reduce, or protect against known hazards or some probable ones. Effort should be made to identify those accidents that stem from unknown hazards or unsuspected hazards. The accident report can provide this information and other related facts which allow you to **improve** upon your safety program by identifying unsuspected hazards, and **eliminate** or **guard against** those hazards.

5. The effectiveness of a safety program can be determined by many factors, depending on the nature or kind of vocational program in which it functions. Some general or universal indicators of an effective program include the following.
   - It provides an opportunity to practice safety through manipulative activity.
   - It provides for teaching the hazards of tools and machines.
   - It provides individual as well as group instruction.
   - It helps students prepare for safe conduct in and out of school.
   - It has provisions to emphasize accident prevention as practiced in industry.

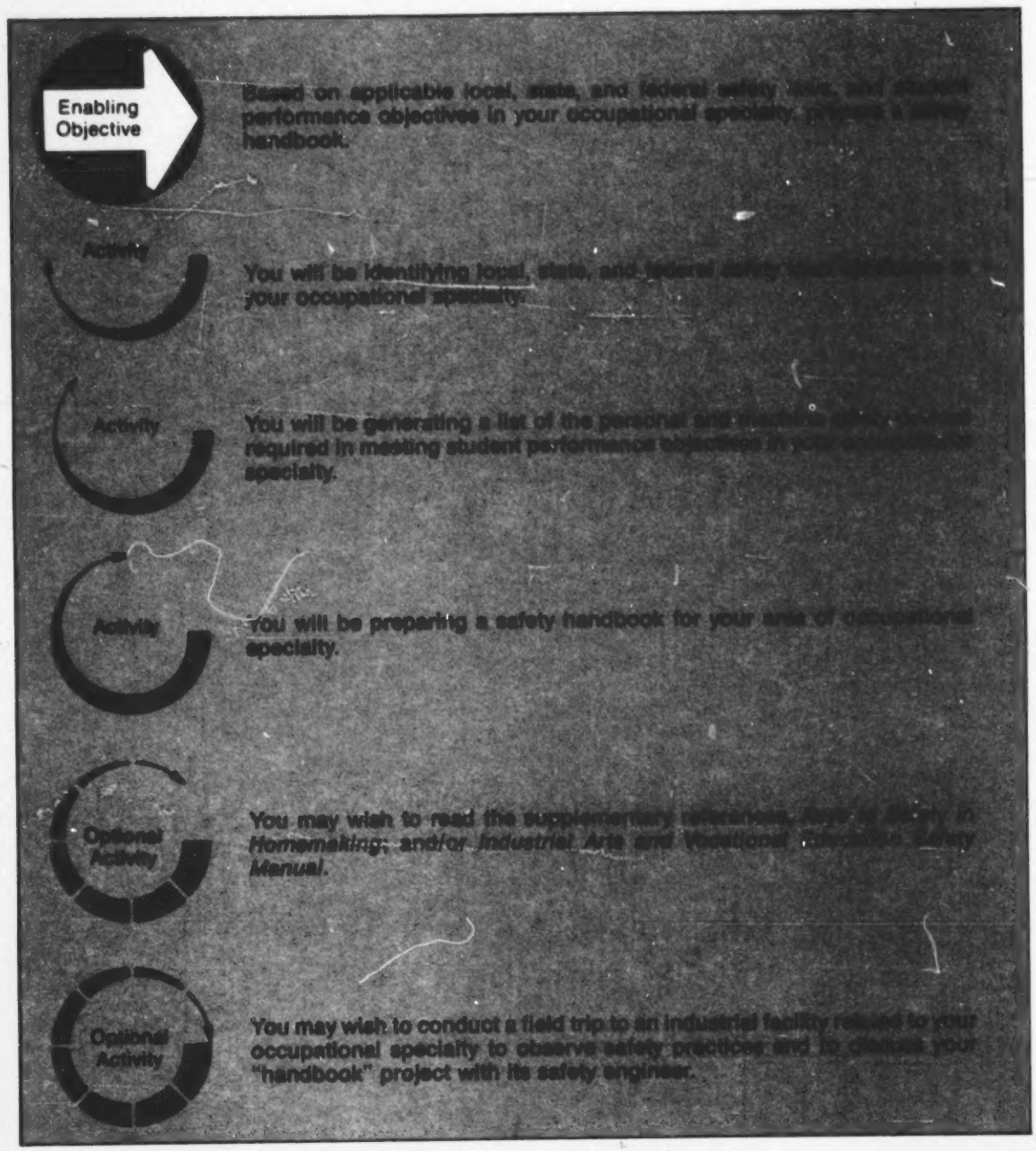
6. A record of safety instruction can serve in the following ways: (1) it can assist a teacher with evidence of safety instruction when he or she is involved in a liability suit; (2) it is an excellent source to assist the teacher who is attempting to revise the safety program; and (3) it serves as a handy reference for teachers to determine the extent of their safety instruction and those areas needing immediate attention.

7. Safety posters hanging near machines, appliances, and other equipment in the school laboratory can serve as attention-getters. A quick reminder of some important safety practice can be easily accomplished through a cartoon illustration of what happens when that practice is ignored. Posters can also be used as effective teaching aids. As you present safety instruction, illustrations can help emphasize a major point of the lesson.

**LEVEL OF PERFORMANCE:** Your completed Self-Check should have covered the same **major** points as the model responses. If you missed some points or have questions about any additional points you made, review the material in the information sheet, Providing for Student Safety Needs, pp. 6–17, or check with your resource person if necessary.

# Learning Experience II

## OVERVIEW


Enabling Objective
Based on applicable local, state, and federal safety laws, and student performance objectives in your occupational specialty, prepare a safety handbook.
Activity
You will be identifying local, state, and federal safety laws applicable to your occupational specialty.
Activity
You will be generating a list of the personal and material resources required in meeting student performance objectives in your occupational specialty.
Activity
You will be preparing a safety handbook for your area of occupational specialty.
Optional Activity
You may wish to read the supplementary references, Appendix A, pp. in Homemaking; and/or Industrial Arts and Vocational Education, Safety Manual.
Optional Activity
You may wish to conduct a field trip to an industrial facility related to your occupational specialty to observe safety practices and to discuss your "handbook" project with its safety engineer.

Examine local, state, and federal safety laws to identify the **personal** and **machine** protective devices required for your area of occupational specialty. Write or call your state department of industrial safety to obtain a list of these applicable laws or to find out the appropriate source to contact for the same information. (Some states publish safety laws in the form of safety manuals or safety handbooks.)

Obtain a curriculum guide or course of study for your occupational specialty, examine the student performance objectives it contains, and then generate a list of the personal and machine safety devices required in meeting those objectives.

Using the information obtained from examining safety laws, and the list of safety devices you generated, prepare a safety handbook for your occupational specialty. Your handbook should also include all the general safety rules and practices you will incorporate into your safety program.

You may wish to refer to *Industrial Arts and Vocational Education Safety Manual*, and/or *Keys to Safety in Homemaking*, if you need a sample to follow in organizing your handbook.

If you wish to see a safety program in action before completing your handbook, you may wish to arrange through your resource person to visit an industrial facility related to your occupational specialty to observe their safety program. Your arrangements may include requesting a conference with the company's safety engineer to discuss safety practices, and rules and regulations observed at the facility. During this conference, you could discuss your handbook project with the safety engineer and seek any suggestions he/she may have regarding the contents of your handbook.

If you wish to discuss the content of your handbook before it is completed, plan a detailed outline and ask your resource person to review it before you begin the final preparation.

After you have developed your handbook, use the Safety Handbook Checklist, p. 27, to evaluate your work.

# NOTES

# SAFETY HANDBOOK CHECKLIST

**Directions:** Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name _____

Date _____

Resource Person _____

**LEVEL OF PERFORMANCE**

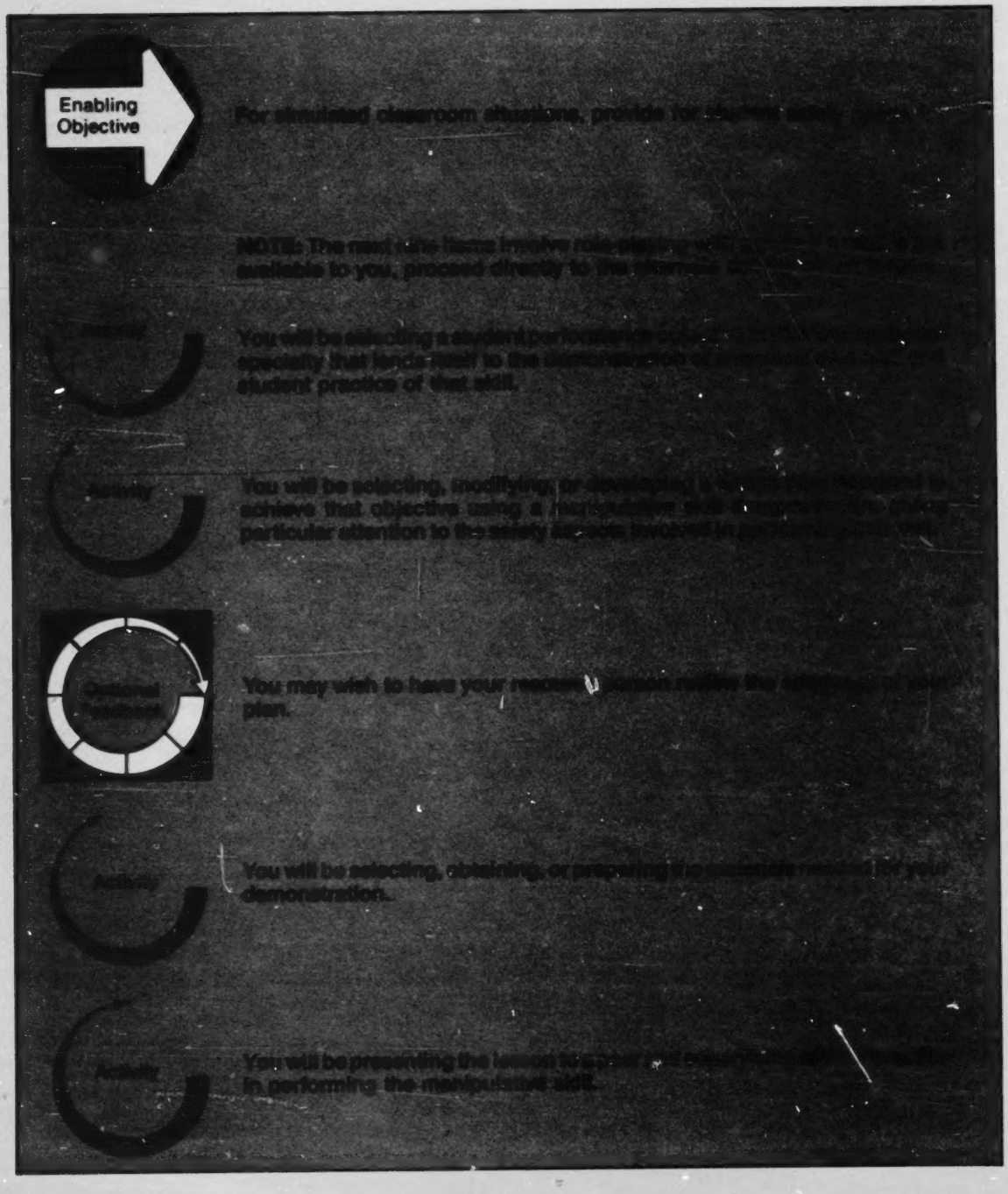
| | N/A | No | Partial | Full |
|---|---|---|---|---|
| **The handbook:** | | | | |
| 1. conformed to federal safety laws | ☐ | ☐ | ☐ | |
| 2. conformed to state safety laws | ☐ | ☐ | ☐ | |
| 3. conformed to local safety laws | ☐ | ☐ | ☐ | |
| 4. specified safe conditions in the laboratory with respect to floors, aisles, lighting, ventilation, exits, and signs | ☐ | ☐ | ☐ | |
| 5. included procedures to follow in the event of fire | ☐ | ☐ | ☐ | |
| 6. specified regulations pertaining to apparel, such as safety glasses, helmets, aprons, shoes, gloves, loose clothing, and jewelry | ☐ | ☐ | ☐ | |
| 7. specified safe operating conditions for equipment, such as guards, control switches, and proper maintenance | ☐ | ☐ | ☐ | |
| 8. specified requirements for teacher supervision | ☐ | ☐ | ☐ | |
| 9. specified general safety rules to govern conduct in the laboratory, such as: | | | | |
| a. housekeeping | ☐ | ☐ | ☐ | |
| b. using tools, appliances, and machines | ☐ | ☐ | ☐ | |
| c. returning tools to proper places | ☐ | ☐ | ☐ | |
| 10. gave procedures to follow in case of an accident | ☐ | ☐ | ☐ | |

**LEVEL OF PERFORMANCE:** All items must receive FULL, or N/A responses. If any item receives a NO, or PARTIAL response, review the material in the information sheet, Providing for Student Safety Needs, pp. 6–17, and/or the local, state, and federal safety laws applicable to your occupational specialty, revise your handbook accordingly, or check with your resource person if necessary.

# NOTES

# Learning Experience III

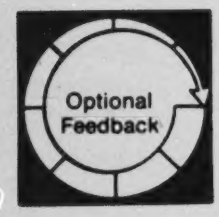
**OVERVIEW**



**NOTE:** The following activities involve role-playing with a peer. If a peer is not available to you, turn to p. 37 for an explanation of the alternate activity.

Select a student performance objective in your occupational specialty that could be achieved, at least partially, by a manipulative skill demonstration and student practice. (In a real world situation, you start with an objective and then select the most appropriate materials and/or teaching methods. In this practice situation, however, you need to select an objective that lends itself to demonstrating a manipulative skill.)

Prepare a detailed lesson plan which includes an explanation of how the manipulative skill will be demonstrated and how the safety needs of students will be provided for. Instead of developing a lesson plan, you may select a lesson that you have developed previously, and adapt that plan so that it includes a manipulative skill demonstration which provides for student safety needs.




You may wish to have your resource person review the adequacy of your plan. He/she could use the Teacher Performance Assessment Form in Module B–4, *Develop a Lesson Plan*, as a guide.

Based on your lesson plan, select, obtain, or prepare the materials and equipment you will need to give your demonstration.

In a simulated situation, present a manipulative skill demonstration to a peer, and supervise his/her practice of the skill. The peer will serve two functions: (1) he/she will role-play a student to whom you are presenting your demonstration, and whose practice you are supervising, and (2) he/she will evaluate your performance.

If you wish to self-evaluate, you may record your performance on videotape so you may view your own demonstration and subsequent supervision of the student at a later time.

Using the Safety Form shown in Sample 2 on p. 16, or one in use in your occupational specialty, record the safety practices covered in your demonstration, and any other **applicable** information called for by the form (i.e., if the form calls for recording safety quiz scores, you will obviously not be able to provide this information).

Multiple copies of the Demonstration/Supervision Checklist are provided in this learning experience. Give a copy to the peer before making your presentation in order to ensure that he/she knows what to look for in your demonstration/supervision. However, indicate that during these activities, all attention is to be directed toward you, and that the checklist is to be completed **after** the activities are finished.

If you videotaped your presentation, you may wish to self-evaluate using a copy of the Demonstration/Supervision Checklist.

# DEMONSTRATION/SUPERVISION CHECKLIST

**Directions:** Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name _____

Date _____

Resource Person _____

**LEVEL OF PERFORMANCE**

| | N/A | No | Partial | Full |
|---|---|---|---|---|
| 1. During the manipulative skill demonstration, the environment was safe with respect to: | | | | |
| a. the condition of tools, appliances, and machines | ☐ | ☐ | ☐ | |
| b. materials, e.g., liquids, metal, wood, etc. | ☐ | ☐ | ☐ | |
| c. condition of the demonstration area | ☐ | ☐ | ☐ | |
| d. placement of the student | ☐ | ☐ | ☐ | |
| e. lighting and ventilation | ☐ | ☐ | ☐ | |
| 2. Safety practices specific to performing the manipulative skill were covered | ☐ | ☐ | ☐ | |
| 3. The teacher pointed out known safety hazards associated with the manipulative skill | ☐ | ☐ | ☐ | |
| 4. The teacher used appropriate machine safety guards | ☐ | ☐ | ☐ | |
| 5. The teacher used appropriate personal protective equipment and devices | ☐ | ☐ | ☐ | |
| 6. The teacher explained **why** each personal safety device was used | ☐ | ☐ | ☐ | |
| 7. The teacher encouraged questions about safety aspects of the demonstration | ☐ | ☐ | ☐ | |
| 8. The teacher asked key questions about the safety features of the demonstration | ☐ | ☐ | ☐ | |
| 9. The teacher avoided any shortcuts in safety practices | ☐ | ☐ | ☐ | |
| 10. The teacher ensured that the student followed correctly all safety practices involved in performing the skill | ☐ | ☐ | ☐ | |
| 11. The teacher recorded the safety instruction provided | ☐ | ☐ | ☐ | |

**LEVEL OF PERFORMANCE:** All items must receive FULL, or N/A responses. If any item receives a NO, or PARTIAL response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

# NOTES

# DEMONSTRATION/SUPERVISION CHECKLIST

**Directions:** Place an X in the NO, PARTIAL, or FULL box to indicate that each of the following performance components was not accomplished, partially accomplished, or fully accomplished. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

Name _____

Date _____

Resource Person _____

**LEVEL OF PERFORMANCE**

| | N/A | No | Partial | Full |
|---|---|---|---|---|
| 1. During the manipulative skill demonstration, the environment was safe with respect to: | | | | |
| a. the condition of tools, appliances, and machines | ☐ | ☐ | ☐ | |
| b. materials, e.g., liquids, metal, wood, etc. | ☐ | ☐ | ☐ | |
| c. condition of the demonstration area | ☐ | ☐ | ☐ | |
| d. placement of the student | ☐ | ☐ | ☐ | |
| e. lighting and ventilation | ☐ | ☐ | ☐ | |
| 2. Safety practices specific to performing the manipulative skill were covered | ☐ | ☐ | ☐ | |
| 3. The teacher pointed out known safety hazards associated with the manipulative skill | ☐ | ☐ | ☐ | |
| 4. The teacher used appropriate machine safety guards | ☐ | ☐ | ☐ | |
| 5. The teacher used appropriate personal protective equipment and devices | ☐ | ☐ | ☐ | |
| 6. The teacher explained **why** each personal safety device was used | ☐ | ☐ | ☐ | |
| 7. The teacher encouraged questions about safety aspects of the demonstration | ☐ | ☐ | ☐ | |
| 8. The teacher asked key questions about the safety features of the demonstration | ☐ | ☐ | ☐ | |
| 9. The teacher avoided any shortcuts in safety practices | ☐ | ☐ | ☐ | |
| 10. The teacher ensured that the student followed correctly all safety practices involved in performing the skill | ☐ | ☐ | ☐ | |
| 11. The teacher recorded the safety instruction provided | ☐ | ☐ | ☐ | |

**LEVEL OF PERFORMANCE:** All items must receive FULL, or N/A responses. If any item receives a NO, or PARTIAL response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

# NOTES

The following Case Situations describe how five vocational teachers provided for the safety needs of their students. Read each of the situations and then explain in the space provided (1) what safety precautions were followed, (2) what safety precautions were overlooked, and (3) what precautions you would have taken.

## CASE SITUATIONS

### Case Study 1:

Mr. Wymer, the technical education instructor, walked into his laboratory and found a ten gallon can of benzine leaking onto the floor. As his first class arrived, he cautioned them to keep away from that area. He instructed three of his students to mop the benzine off the floor using cleaning rags. Two other students picked up a box from the custodian to store the soaked cleaning rags. When the floor was clean, Mr. Wymer placed the box in the tool room and resumed the scheduled activities.

### Case Study 2:

To allow students the fullest benefit of skill practice, Mrs. Keyes, the vocational home economics teacher, gave her students permission to work until the end of the class period. She announced that she would be responsible for cleaning the laboratory before the beginning of the next class period.

**Case Study 3:**

After giving a demonstration on the safe way to weld hard surface material to a plow share, Mr. Weldon, the vocational agriculture teacher, instructed his students to practice performing the skill until he returned from downtown. Mr. Weldon decided that since his supplies were ready and downtown was only minutes away, he could get back in plenty of time to meet his next class.

**Case Study 4:**

As Ms. Barnes's 9th grade industrial arts class began, two of her more capable students were anxious to complete an advanced project they had started. To continue their project, they needed to use the table saw. Ms. Barnes did not remember if she had given instruction on the safe use of this machine tool, but the two students insisted that they knew what to do. Ms. Barnes gave them her permission and proceeded with instruction for the rest of the class.

**Case Study 5:**

Mr. Barker was reading a local T & I journal and discovered that there were new safety practices emerging for workers in his specialty. Without delay, he wrote to a couple of local industries for more details. At the same time, he suspended all laboratory activities until the new material arrived.

Compare your completed written critiques of the Case Situations with the Model Critiques given below. Your responses need not exactly duplicate the model responses; however, you should have covered the same **major** points.

## MODEL CRITIQUES

### Case Study 1:

Mr. Wymer exercised good judgment when he instructed his students to keep away from the area where the benzine was leaking and stopped all activities. His decision indicates that he was aware of the potential danger created by the leaking container. By halting all activities, he lessened the chances of igniting the flammable liquid. However, cleaning the floor did not eliminate the hazard. Placing the soaked rags in an open box was very dangerous, because benzine vapor is just as hazardous as the liquid.

Mr. Wymer could have suspended laboratory activity, explained to his class the potential danger of an exposed, flammable liquid, and discussed each cleaning step as he went along. He should have (1) repaired or replaced the leaking container, (2) wiped the benzine off the floor with cleaning rags, (3) placed the cleaning rags in self-closing, metal container and (4) ventilated the entire laboratory before resuming the scheduled activities.

### Case Study 2:

It appears that Mrs. Keyes was aware of the importance of cleaning to maintain a safe environment. This aspect was probably stressed in her teacher training or in her vocational training. On the other hand, Mrs. Keyes overlooked the importance of helping her **students** form the same safety habits. Insisting that each student clear his/her work area and return all tools, materials, and equipment to their designated places would have been the best decision. At one point or another, she should have explained the benefit of good housekeeping and the specific activities involved.

### Case Study 3:

Assuming that Mr. Weldon was thorough in his demonstration, he probably reinforced the following safety practices: (1) correct personal dress for welding (e.g., removing jewelry and ties, and rolling up long sleeves); (2) correct selection and use of personal protective equipment (e.g., welding jackets, aprons, and goggles); (3) correct safety check of welding equipment, (4) correct procedure in performing the welding operation; and (5) correct housekeeping procedure. However, when he left the students to practice without supervision, and left the laboratory area without stopping the operation of all electrical equipment, Mr. Weldon violated good safety practice, and weakened his safety program.

### Case Study 4:

For this class period, Ms. Barnes seems to have ignored all concerns about the safety of her more capable students. It is her responsibility to determine each student's ability to use the table saw or any other laboratory equipment. More importantly, it is her responsibility to keep up-to-date records of all safety instruction for situations just like this one. It is poor practice to depend on students to keep records of instruction.

If she had a record of safety instruction, Ms. Barnes could have gone directly to her records to determine whether the two students were ready to use the table saw safely. Additionally, she should have made some provision to supervise their activity regardless of their advanced work.

### Case Study 5:

Mr. Barker's desire to keep his program current is admirable. However, it appears he ignored the value of "obsolete" safety practices. Mr. Barker could have continued his activities, using the old safety practices, as long as his students had a strong safety awareness. The important point to remember is that changes in safety practices do not necessarily affect a strong attitude toward safety. Besides, there is no guarantee that the new safety practices will last forever. Therefore, Mr. Barker could have continued the same safety program, confident that with a positive safety attitude, his students would easily be able to pick up new skills and knowledge as they encountered them.

**LEVEL OF PERFORMANCE:** Your completed critiques should have covered the same **major** points as the model responses. If you missed some points or have questions about any additional points you made, review the material in the information sheet, Providing for Student Safety Needs, pp. 6–17, or check with your resource person if necessary.

# Learning Experience IV

**FINAL EXPERIENCE**

*For a definition of "actual school situation," see the inside back cover.

# NOTES

# TEACHER PERFORMANCE ASSESSMENT FORM

Provide for Student Safety (E–5)

Name _____

Date _____

Resource Person _____

**Directions:** Indicate the level of the teacher's accomplishment by placing an X in the appropriate box under the LEVEL OF PERFORMANCE heading. If, because of special circumstances, a performance component was not applicable, or impossible to execute, place an X in the N/A box.

| | LEVEL OF PERFORMANCE | | | | | |
|---|---|---|---|---|---|---|
| | N/A | None | Poor | Fair | Good | Excellent |
| 1. The teacher's vocational facility meets federal, state, and local safety standards with respect to floors, aisles, lighting, ventilation, exits, and signs | ☐ | ☐ | ☐ | ☐ | | |
| 2. The laboratory meets safety standards with regard to: | | | | | | |
| a. fire extinguishers | ☐ | ☐ | ☐ | ☐ | | |
| b. machine safety guards | ☐ | ☐ | ☐ | ☐ | | |
| c. personal protective materials and devices | ☐ | ☐ | ☐ | ☐ | | |
| d. machine color codes | ☐ | ☐ | ☐ | ☐ | | |
| e. first aid materials | ☐ | ☐ | ☐ | ☐ | | |
| f. storage of liquids and flammable materials | ☐ | ☐ | ☐ | ☐ | | |
| g. electrical switches | ☐ | ☐ | ☐ | ☐ | | |
| 3. During the manipulative skill demonstration, the environment was safe with respect to: | | | | | | |
| a. the condition of tools, appliances, and machines | ☐ | ☐ | ☐ | ☐ | | |
| b. materials | ☐ | ☐ | ☐ | ☐ | | |
| c. condition of the demonstration area | ☐ | ☐ | ☐ | ☐ | | |
| d. placement of students | ☐ | ☐ | ☐ | ☐ | | |
| e. lighting and ventilation | ☐ | ☐ | ☐ | ☐ | | |
| 4. The teacher used safety practices appropriate to performing the skill | ☐ | ☐ | ☐ | ☐ | | |
| 5. The teacher used appropriate working apparel | ☐ | ☐ | ☐ | ☐ | | |
| 6. The teacher asked students questions about safety aspects of the demonstration | ☐ | ☐ | ☐ | ☐ | | |
| 7. The teacher encouraged safety questions from students | ☐ | ☐ | ☐ | ☐ | | |

| | N/A | None | Poor | Fair | Good | Excellent |
|---|---|---|---|---|---|---|
| 8. The teacher verbally reinforced safety practices with respect to: | | | | | | |
| a. safe use of tools, appliances, and machines ..... | ☐ | ☐ | ☐ | ☐ | | |
| b. proper wearing of personal protective devices ..... | ☐ | ☐ | ☐ | ☐ | | |
| c. safe use of materials for the demonstration ..... | ☐ | ☐ | ☐ | ☐ | | |
| d. safe preparation of clothing such as removal of ties, rolling up of long sleeves, etc. ..... | ☐ | ☐ | ☐ | ☐ | | |
| 9. The teacher avoided any shortcuts to safety ..... | ☐ | ☐ | ☐ | ☐ | | |
| 10. The teacher pointed out safety hazards associated with the manipulative skill ..... | ☐ | ☐ | ☐ | ☐ | | |
| 11. The teacher ensured that the students followed correctly all safety practices involved in performing the skill .... | ☐ | ☐ | ☐ | ☐ | | |
| 12. The teacher maintained a record of the safety instruction provided ..... | ☐ | ☐ | ☐ | ☐ | | |

**LEVEL OF PERFORMANCE:** All items must receive N/A, GOOD, or EXCELLENT responses. If any item receives a NONE, POOR, or FAIR response, the teacher and resource person should meet to determine what additional activities the teacher needs to complete in order to reach competency in the weak area(s).

# NOTES

# NOTES

# ABOUT USING THE CENTER'S PBTE MODULES

### Organization

Each module is designed to help you gain competency in a particular skill area considered important to teaching success. A module is made up of a series of learning experiences, some providing background information, some providing practice experiences, and others combining these two functions. Completing these experiences should enable you to achieve the **terminal** objective in the final learning experience. The final experience in each module always requires you to demonstrate the skill in an actual school situation when you are an intern, a student teacher, or an inservice teacher.

### Procedures

Modules are designed to allow you to individualize your teacher education program. You need to take only those modules covering skills which you do not already possess. Similarly, you need not complete any learning experience within a module if you already have the skill needed to complete it. Therefore, before taking any module, you should carefully review (1) the Introduction, (2) the Objectives listed on p. 4, (3) the Overviews preceding each learning experience, and (4) the Final Experience. After comparing your present needs and competencies with the information you have read in these sections, you should be ready to make one of the following decisions:

- that you do not have the competencies indicated, and should complete the entire module
- that you are competent in one or more of the enabling objectives leading to the final learning experience, and thus can omit that (those) learning experience(s)
- that you are already competent in this area, and ready to complete the final learning experience in order to "test out"
- that the module is inappropriate to your needs at this time

When you are ready to take the final learning experience and have access to an actual school situation, make the necessary arrangements with your resource person. If you do not complete the final experience successfully, meet with your resource person and arrange (1) to repeat the experience, or (2) complete (or review) previous sections of the module or other related activities suggested by your resource person before attempting to repeat the final experience.

Options for recycling are also available in each of the learning experiences preceding the final experience. Any time you do not meet the minimum level of performance required to meet an objective, you and your resource person may meet to select activities to help you reach competency. This could involve (1) completing parts of the module previously skipped; (2) repeating activities; (3) reading supplementary resources or completing additional activities suggested by the resource person; (4) designing your own learning experience; or (5) completing some other activity suggested by you or your resource person.

### Terminology

**Actual School Situation** . . . refers to a situation in which you are actually working with, and responsible for, secondary or post-secondary vocational students in a real school. An intern, a student teacher, or an inservice teacher would be functioning in an actual school situation. If you do not have access to an actual school situation when you are taking the module, you can complete the module up to the final learning experience. You would then do the final learning experience later; i.e., when you have access to an actual school situation.

**Alternate Activity or Feedback** . . . refers to an item or feedback device which may **substitute** for required items which, due to special circumstances, you are unable to complete.

**Occupational Specialty** . . . refers to a specific area of preparation within a vocational service area (e.g., the service area Trade and Industrial Education includes occupational specialties such as automobile mechanics, welding, and electricity).

**Optional Activity** or **Feedback** . . . refers to an item which is not required, but which is designed to **supplement** and enrich the required items in a learning experience.

**Resource Person** . . . refers to the person in charge of your educational program; the professor, instructor, administrator, supervisor, or cooperating/supervising/classroom teacher who is guiding you in taking this module.

**Student** . . . refers to the person who is enrolled and receiving instruction in a secondary or post-secondary educational institution.

**Vocational Service Area** . . . refers to a major vocational field: agricultural education, business and office education, distributive education, health occupations education, home economics education, industrial arts education, technical education, or trade and industrial education.

**You or the Teacher** . . . refers to the person who is taking the module.

### Levels of Performance for Final Assessment

**N/A** . . . The criterion was not met because it was **not applicable** to the situation.
**None** . . . **No attempt** was made to meet the criterion, although it was relevant.
**Poor** . . . The teacher is unable to perform this skill or has only **very limited ability** to perform it.
**Fair** . . . The teacher is unable to perform this skill in an acceptable manner, but has **some ability** to perform it.
**Good** . . . The teacher is able to perform this skill in an **effective** manner.
**Excellent** . . . The teacher is able to perform this skill in a **very effective** manner.

# Titles of The Center's Performance-Based Teacher Education Modules

**Category A: Program Planning, Development, and Evaluation**

A–1 Prepare for a Community Survey
A–2 Conduct a Community Survey
A–3 Report the Findings of a Community Survey
A–4 Organize an Occupational Advisory Committee
A–5 Maintain an Occupational Advisory Committee
A–6 Develop Program Goals and Objectives
A–7 Conduct an Occupational Analysis
A–8 Develop a Course of Study
A–9 Develop Long-Range Program Plans
A–10 Conduct a Student Follow-Up Study
A–11 Evaluate Your Vocational Program

**Category B: Instructional Planning**

B–1 Determine Needs and Interests of Students
B–2 Develop Student Performance Objectives
B–3 Develop a Unit of Instruction
B–4 Develop a Lesson Plan
B–5 Select Student Instructional Materials
B–6 Prepare Teacher-Made Instructional Materials

**Category C: Instructional Execution**

C–1 Direct Field Trips
C–2 Conduct Group Discussions, Panel Discussions, and Symposiums
C–3 Employ Brainstorming, Buzz Group, and Question Box Techniques
C–4 Direct Students in Instructing Other Students
C–5 Employ Simulation Techniques
C–6 Guide Student Study
C–7 Direct Student Laboratory Experience
C–8 Direct Students in Applying Problem-Solving Techniques
C–9 Employ the Project Method
C–10 Introduce a Lesson
C–11 Summarize a Lesson
C–12 Employ Oral Questioning Techniques
C–13 Employ Reinforcement Techniques
C–14 Provide Instruction for Slower and More Capable Learners
C–15 Present an Illustrated Talk
C–16 Demonstrate a Manipulative Skill
C–17 Demonstrate a Concept or Principle
C–18 Individualize Instruction
C–19 Employ the Team Teaching Approach
C–20 Use Subject Matter Experts to Present Information
C–21 Prepare Bulletin Boards and Exhibits
C–22 Present Information with Models, Real Objects, and Flannel Boards
C–23 Present Information with Overhead and Opaque Materials
C–24 Present Information with Filmstrips and Slides
C–25 Present Information with Films
C–26 Present Information with Audio Recordings
C–27 Present Information with Televised and Videotaped Materials
C–28 Employ Programmed Instruction
C–29 Present Information with the Chalkboard and Flip Chart

**Category D: Instructional Evaluation**

D–1 Establish Student Performance Criteria
D–2 Assess Student Performance: Knowledge
D–3 Assess Student Performance: Attitudes
D–4 Assess Student Performance: Skills
D–5 Determine Student Grades
D–6 Evaluate Your Instructional Effectiveness

**Category E: Instructional Management**

E–1 Project Instructional Resource Needs
E–2 Manage Your Budgeting and Reporting Responsibilities
E–3 Arrange for Improvement of Your Vocational Facilities
E–4 Maintain a Filing System
E–5 Provide for Student Safety
E–6 Provide for the First Aid Needs of Students
E–7 Assist Students in Developing Self-Discipline
E–8 Organize the Vocational Laboratory
E–9 Manage the Vocational Laboratory

**Category F: Guidance**

F–1 Gather Student Data Using Formal Data-Collection Techniques
F–2 Gather Student Data Through Personal Contacts
F–3 Use Conferences to Help Meet Student Needs
F–4 Provide Information on Educational and Career Opportunities
F–5 Assist Students in Applying for Employment or Further Education

**Category G: School-Community Relations**

G–1 Develop a School-Community Relations Plan for Your Vocational Program
G–2 Give Presentations to Promote Your Vocational Program
G–3 Develop Brochures to Promote Your Vocational Program
G–4 Prepare Displays to Promote Your Vocational Program
G–5 Prepare News Releases and Articles Concerning Your Vocational Program
G–6 Arrange for Television and Radio Presentations Concerning Your Vocational Program
G–7 Conduct an Open House
G–8 Work with Members of the Community
G–9 Work with State and Local Educators
G–10 Obtain Feedback about Your Vocational Program

**Category H: Student Vocational Organization**

H–1 Develop a Personal Philosophy Concerning Student Vocational Organizations
H–2 Establish a Student Vocational Organization
H–3 Prepare Student Vocational Organization Members for Leadership Roles
H–4 Assist Student Vocational Organization Members in Developing and Financing a Yearly Program of Activities
H–5 Supervise Activities of the Student Vocational Organization
H–6 Guide Participation in Student Vocational Organization Contests

**Category I: Professional Role and Development**

I–1 Keep Up-to-Date Professionally
I–2 Serve Your Teaching Profession
I–3 Develop an Active Personal Philosophy of Education
I–4 Serve the School and Community
I–5 Obtain a Suitable Teaching Position
I–6 Provide Laboratory Experiences for Prospective Teachers
I–7 Plan the Student Teaching Experience
I–8 Supervise Student Teachers

**Category J: Coordination of Cooperative Education**

J–1 Establish Guidelines for Your Cooperative Vocational Program
J–2 Manage the Attendance, Transfers, and Terminations of Co-Op Students
J–3 Enroll Students in Your Co-Op Program
J–4 Secure Training Stations for Your Co-Op Program
J–5 Place Co-Op Students on the Job
J–6 Develop the Training Ability of On-the-Job Instructors
J–7 Coordinate On-the-Job Instruction
J–8 Evaluate Co-Op Students' On-the-Job Performance
J–9 Prepare for Students' Related Instruction
J–10 Supervise an Employer-Employee Appreciation Event

**RELATED PUBLICATIONS**

Student Guide to Using Performance-Based Teacher Education Materials
Resource Person Guide to Using Performance-Based Teacher Education Materials
Guide to the Implementation of Performance-Based Teacher Education

**For information regarding availability and prices of these materials contact—**

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